Name:

at1118paper: Complete the Square (v414)

Example

By completing the square, find both solutions to the given equation:

$$x^2 - 56x = -780$$

Add $\left(\frac{-56}{2}\right)^2$, which equals 784, to both sides of the equation.

$$x^2 - 56x + 784 = 4$$

Factor the left side.

$$(x - 28)^2 = 4$$

Undo the squaring. We need to consider both $\pm\sqrt{4}$.

$$x - 28 = -2 \quad \text{or} \quad x - 28 = 2$$
$$x = 26 \quad \text{or} \quad x = 30$$

Question 1

By completing the square, find both solutions to the given equation:

$$x^2 + 40x = -204$$

Question 2

By completing the square, find both solutions to the given equation:

$$x^2 - 46x = 840$$

Question 3

By completing the square, find both solutions to the given equation:

$$x^2 - 24x \;=\; -63$$

Question 4

By completing the square, find both solutions to the given equation:

$$x^2 - 38x \;=\; -240$$

Question 5

By completing the square, find both solutions to the given equation:

$$x^2 - 8x \;=\; 84$$

Question 6

By completing the square, find both solutions to the given equation:

$$x^2 - 58x \;=\; -792$$